Space Weather Forecast

Issued on Friday, 21 June 2024 at 01:13 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

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Space Weather Forecast Headline: Further Moderate flares (R1-R2 radio blackouts) expected. Chance of isolated Strong flares (R3 radio blackouts). Chance of S1/Minor radiation storms.

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Solar activity is Moderate with two Moderate flares observed from a developing region in the southeast disc. There are eight sunspot regions, the largest of these all lie in the western hemisphere. These regions all underwent growth and consolidation of their component regions and are magnetically complex. Despite this they appear stable at this time, with limited flaring observed. Two moderately sized spots with moderate complexity reside in the southeast disc. All other spots are small and simple at this time.
No Earth directed Coronal Mass Ejections (CMEs) have been observed in the past 24 hours.

Solar Wind / Geomagnetic Activity: Solar winds indicated declining coronal hole fast wind influence. Wind speeds fell from elevated to slightly elevated levels. The Interplanetary Magnetic Field was weak and the important north-south component varied weakly. Geomagnetic activity was Quiet (Kp 1-2).

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) has remained at background levels with no solar radiation storms occurring.

Four-Day Space Weather Forecast Summary

Solar Activity: Further Moderate flares are expected, with a chance of isolated Strong flares, most likely from the three large sunspot regions in the western hemisphere, or regions in the southeast disc.

Solar Wind / Geomagnetic Activity: No Earth-directed CMEs feature in the forecast period. Ongoing coronal hole influence should continue to ease on day 1 (21 Jun) with winds expected to reduce to background from slightly elevated levels. A further enhancement from the large coronal hole in the northwest disc is possible on days 1 and 2 (21 and 22 Jun), however, significant connection to this feature is considered unlikely given its high-latitude location on the disc. If a connection were to be forthcoming, speeds could reach slightly elevated to elevated levels. Any geomagnetic response, however, is expected to be limited at this time of year. No other potential coronal hole enhancements feature in the period.
Overall mainly Quiet to Unsettled geomagnetic activity is expected. There is a chance of isolated Active intervals, mainly on day 1 and 2 (21 and 22 Jun), should there be any notable connection to the high-speed stream enhancement from the aforementioned large coronal hole.

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) is forecast to be at background levels, but with a chance of exceeding the S1/Minor Storm threshold should any notable flares occur, predominantly from any of the three large spots in the western hemisphere.

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Geomagnetic Storms:

Geo-Magnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	No	10	10	5	5
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 M Class	Yes	90	90	90	90
Very Active	R3 to R5 X	No	25	25	25	25

Solar Radiation Storms - (High Energy Protons):

Radiation Storms Probability (Exceedance)	Level (cm^{-2} sr^{-1} s^{-1})	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	≥ S1	No	30	30	30	30
Very Active	≥ S3 *	No	5	5	5	5

* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)

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